

Application No: 10/811,627
Amendment dated July 21, 2006
Reply to Office Action Dated May 3, 2006

Attorney Docket No: 3926.077

REMARKS

Claims 9-17 are pending in the application. Claims 9-17 have been amended. Claims 1-8 have been previously cancelled.

Claim Objections

Claim 9 is objected to because of an informality.

Appropriate correction has been made.

Claim Rejections - 35 U.S.C. § 112

Claim 9-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

More specifically, the Examiner has stated that the limitation of an IR-filter associated with the camera is ambiguous because while it is common to include an infrared filter as part of the detector of infrared sensitive cameras, the disclosure seems to suggest that the recited filter is different or additional filter that might be associated more with the camera itself than with the detector.

The language of claim 9 has been modified to clearly recite that the IR-filter is associated with the camera and disposed in front of the camera.

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The Examiner has also stated that the limitation "said at least one area" recited in claims 11-15 is unclear because there are at least two different possible antecedent basis (claim 9 and claim 10) for these limitations.

Claim 10 has been amended to make it clear that there is only one possible antecedent basis.

Claim Rejections - 35 U.S.C. § 103

Claims 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (US 6,150,930) in view of Eschler et al (US 2002/0001198 A1) and Kobayashi (US 2003/0076688 A1).

First, Applicants would like to briefly review the present invention.

Devices for improving visibility in a motor vehicle by using an IR-filter exist. However, the filter in the prior art either completely blocks or strongly attenuates the visible light.

The object of the present invention is to provide a device for improving the visibility in a motor vehicle that in a simple manner makes it possible to recognize traffic lights, brake lights and turn signals of other traffic participants in a sufficiently reliable manner.

The present invention concerns a device for improving the view in a motor vehicle, comprising

a radiation source for illumination of the vehicle environment with infrared radiation,
an infrared sensitive camera for detecting at least a part of the illuminated vehicle environment,
an IR-filter associated with the camera and disposed in front of the camera, and
a display for representing the image information acquired by the camera,

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wherein different areas of the IR-filter area exhibit different transmission characteristics, and wherein at least one area of the IR-filter is almost transparent for visible light or a part thereof.

The Examiner has stated that although Cooper does not disclose a filter, Eschler discloses an IR-screen (24) associated with a camera (12) and Kobayashi discloses an IR-filter (30A) with different areas exhibiting different transmission characteristics. The Examiner, therefore, concludes that it would be a matter of routine design choice to substitute a filter for the camera in stead of the screen as suggested by Eschler.

Applicants believe that neither Cooper or Eschler or Kobayashi discloses an IR-filter, which is associated with the infrared sensitive camera for preventing the IR sensitive camera from being strongly glared or blinded or significantly damaged by the visible light. Cooper shows a comparable night vision system, which, however, does not have an IR-filter associated with an infrared sensitive camera. The camera of Cooper is equally sensitive to the visible light (red, green, blue) and the invisible light (IR) and thus cannot have an IR-filter, which basically prevents the intake of substantial parts of a red, green, blue visible light. The function of the night vision system according to Cooper excludes the application of an IR-filter, which basically filters out the visible light and only lets the infrared radiation to go through. Therefore, a person skilled in the art would not provide the system of Cooper with an IR-filter for an IR-sensitive camera because this system would then lose its essential function of copiously and reliably displaying the visible image information.

Both Kobayashi and Eschler shows exclusively the application of IR-filter in the headlight. These filters are integrated in the headlight and thus is not associated with, and especially not disposed in front of, the infrared sensitive camera. The filters in Kobayashi and Eschler prevent the visible light from going through the filter. If applying the headlight of Eschler or Kobayashi in the device of Cooper, the camera of Cooper will display the fully visible image information (red, green, blue) and also better perceive the infrared radiation illuminated through the headlight of Eschler or Kobayashi or also Cooper.

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The camera of Cooper does not encounter the problem to be solved by the present invention, namely a night vision system having an IR-sensitive camera with IR-filter is not in the position to reliably recognize the traffic lights or back up light, which radiate in the visible spectrum of the light, because the IR-filter reliably filters out this light part. Therefore, Cooper shows a completely different device, which is not comparable with a night vision system described in the background of the instant application and thus Cooper can also not provide any hint towards the solution of the problem upon which the present invention is based. In order to achieve the object of the present invention of making the individual brighter objects in visible region of the light to be visible, the present invention proposes forming the IR-filter, which is associated with the infrared camera and blocks the visible light, in such a way that individual areas with very limited space will let the visible light through while the predominant rest area of the IR-filter blocks the visible light. This spatial allocation of the IR-filter associated with the infrared camera achieves the object that individual visible objects can be recognized.

The inventive configuration of an IR-filter in front of such a camera cannot be disclosed by Cooper; rather, Cooper teaches away from this solution. In addition, the filter in Kobayashi or Eschler, which is applied exclusively in the housing of the headlight, provides no hint towards forming an IR-filter in the inventive manner together with the IR-sensitive camera.

It is, therefore, believed that the cited references, whether individually or in combination, do not disclose or suggest the features recited in claim 9 of the instant application. Claim 9 is, therefore, believed to be patentable over the art and since all the dependent claims are ultimately dependent on claim 9, they are believed to be patentable as well.

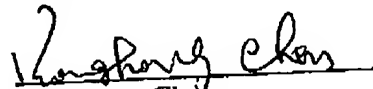
Favorable consideration and early issuance of the Notice of Allowance are respectfully

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requested. Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

Respectfully submitted,



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